

**WHAT IS CLAIMED IS:**

1. A control system for use in a subterranean well, the system  
5 comprising:  
a well tool;  
an actuator for the well tool; and  
a control module interconnected between the actuator and first and  
second fluid lines, the control module being operative to meter a predetermined  
10 volume of fluid from the actuator to the second line in response to an increased  
pressure differential from the first line to the second line.
2. The system according to claim 1, wherein the control module  
transmits fluid from the first line to the actuator in response to the increased  
15 pressure differential.
3. The system according to claim 1, wherein a piston of the control  
module displaces a predetermined distance, thereby displacing the  
predetermined volume of fluid to the second line, in response to the increased  
20 pressure differential.

4. The system according to claim 1, wherein a valve of the control module controlling fluid flow between the actuator and the second line closes in response to the increased pressure differential.

5. The system according to claim 4, wherein the valve controls fluid flow between opposite sides of a piston of the control module.

6. The system according to claim 5, wherein closure of the valve permits the piston to displace a predetermined distance, thereby displacing the predetermined volume of fluid to the second line, in response to the increased pressure differential.

7. The system according to claim 1, wherein the control module prevents pressure applied to the first line from being communicated to the actuator until the pressure differential reaches a predetermined level.

8. The system according to claim 1, wherein the control module permits pressure applied to the second line to be transmitted to the actuator, and from the actuator to the first line, without metering flow from the actuator to the first line.

9. The system according to claim 1, wherein the control module is operative to repeatedly meter the predetermined volume of fluid from the actuator to the second line in response to respective successive increases in the pressure differential.

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10. The system according to claim 9, wherein the actuator incrementally actuates the well tool in response to each metering of the predetermined volume of fluid from the actuator to the second line.

11. A control system for use in a subterranean well, the system comprising:

a well tool;

an actuator including an actuator piston which displaces to operate the  
5 well tool; and

a control module interconnected between the actuator and first and second fluid lines, a pressure differential from the first line to the second line being operative to displace the actuator piston and operate the well tool, and the control module being operative to meter a predetermined volume of fluid from  
10 the actuator to the second line, to thereby limit displacement of the actuator piston in response to each of multiple increases in the pressure differential from the first line to the second line.

12. The control system according to claim 11, wherein the control  
15 module includes a pressure relief valve interconnected between the first line and the actuator.

13. The control system according to claim 12, wherein the control module includes a check valve permitting flow therethrough from the actuator to  
20 the first line and preventing flow therethrough from the first line to the actuator.

14. The control system according to claim 13, wherein the check valve is in parallel with the pressure relief valve.

15. The control system according to claim 11, wherein the control  
5 module prevents pressure from being transmitted from the first line to the actuator until the pressure differential reaches a predetermined level.

16. The control system according to claim 15, wherein the control module permits relatively unrestricted flow from the actuator to the first line.

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17. The control system according to claim 11, wherein the control module provides greater restriction to flow between the second line and the actuator than between the first line and the actuator.

15 18. The control system according to claim 11, wherein the control module includes a control module piston having first and second opposite sides, the first side being in fluid communication with the actuator, and the second side being in fluid communication with the second line.

20 19. The control system according to claim 18, wherein the control module piston displaces a predetermined distance in response to pressure

applied from the actuator to the first side, to thereby meter the predetermined volume of fluid from the actuator to the second line.

20. The control system according to claim 19, wherein pressure applied  
5 from the actuator to the first side displaces the control module piston against a force exerted by a biasing device of the control module.

21. The control system according to claim 19, wherein the control  
module includes a valve selectively permitting and preventing flow between the  
10 first and second sides of the control module piston.

22. The control system according to claim 21, wherein the pressure differential operates to close the valve.

23. A method of controlling actuation of a well tool, the method comprising the steps of:

interconnecting a control module between first and second fluid lines and an actuator of the well tool;

5 increasing a pressure differential from the first line to the second line, the control module transmitting the pressure differential to the actuator;

metering a predetermined volume of fluid from the actuator to the second line via the control module in response to the pressure differential increasing step, thereby incrementally actuating the well tool; and

10 repeating the pressure differential increasing and metering steps, thereby successively incrementally actuating the well tool.

24. The method according to claim 23, wherein the pressure differential increasing step further comprises preventing flow from the first line to the  
15 actuator until a predetermined differential pressure is reached from the first line to the second line.

25. The method according to claim 23, wherein the pressure differential increasing step further comprises closing a valve of the control module  
20 interconnected between the actuator and the second line.

26. The method according to claim 23, wherein the metering step further comprises displacing a piston of the control module a predetermined distance in response to a pressure differential between the actuator and the second line.

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27. The method according to claim 26, wherein the pressure differential increasing step further comprises closing a valve of the control module, thereby preventing flow between opposite sides of the piston.

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28. The method according to claim 27, wherein the valve closing step further comprises closing the valve in response to a differential between pressure in the first line and pressure applied to the piston from the actuator.

29. The method according to claim 28, wherein the valve closing step  
15 further comprises restricting flow from the actuator to the piston, thereby increasing the differential between pressure in the first line and pressure applied to the piston from the actuator.

30. The method according to claim 23, further comprising the step of  
20 applying pressure to the second line, the control module transmitting pressure applied to the second line to the actuator, without metering fluid flow from the second line to the actuator.